

What is claimed is:

1. A method of treating a cervical intraepithelial neoplasia (CIN) in a human, the method comprising:

identifying an individual as being 30 years of age or younger and as having a
5 CIN; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring human papilloma virus (HPV) protein.

10

2. A method of treating a CIN in a human, the method comprising:

identifying an individual as being 30 years of age or younger and as having a
CIN; and

administering to the individual an effective amount of a pharmaceutical
15 composition identified as being effective for treating CIN in persons 30 years of age or younger, wherein the pharmaceutical composition comprises a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein.

20 3. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as being 30 years of age or younger and as having an HPV-mediated disease; and

administering to the individual an effective amount of a pharmaceutical
25 composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein.

4. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as being 30 years of age or younger and as having an HPV-mediated disease; and

5 administering to the individual an effective amount of a pharmaceutical composition identified as being effective for treating an HPV-mediated disease in persons less 30 years of age or younger, wherein the pharmaceutical composition comprises a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein.

10

5. A method of selecting a treatment for an individual, the method comprising:

identifying an individual as having a CIN;

determining the age of the individual; and

15 if the individual is determined to be less 30 years of age or younger, prescribing for the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein.

20 6. A method of selecting a treatment for an individual, the method comprising:

identifying an individual as having an HPV-mediated disease;

determining the age of the individual; and

25 if the individual is determined to be 30 years of age or younger, prescribing for the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein.

7. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein; and

5 instructions for use of the pharmaceutical composition in treating CIN in persons 30 years of age or younger.

8. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a
10 nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein; and

instructions for use of the pharmaceutical composition in treating an HPV-mediated disease in persons 30 years of age or younger.

15 9. The method or kit of any of claims 1-8, wherein the CIN is cervical intraepithelial neoplasia 1 (CIN1) or low grade squamous intraepithelial lesion (LSIL).

20 10. The method or kit of any of claims 1-8, wherein the CIN is cervical intraepithelial neoplasia 2 (CIN2), cervical intraepithelial neoplasia 3 (CIN3), cervical intraepithelial neoplasia 2/3 (CIN2/3), or high grade squamous intraepithelial lesion (HSIL).

25 11. The method or kit of any of claims 1-8, wherein the HPV-mediated disease is atypical squamous cells of undetermined significance (ASCUS), vulval intraepithelial neoplasia (VIN), or anal intraepithelial neoplasia (AIN).

12. The method or kit of any of claims 1-8, wherein the HPV-mediated disease is cervical cancer, vulvar cancer, anal cancer, vaginal cancer, penile cancer, head and neck cancer, squamous cell carcinoma of the lung, squamous cell carcinoma of the sinuses, squamous cell carcinoma of the esophagus, oral carcinoma, or
5 conjunctival carcinoma.

13. The method or kit of any of claims 1-8, wherein the HPV-mediated disease is anogenital warts, bowenoid papulosis, or giant condylomata.

10 14. The method or kit of any of claims 1-8, wherein the HPV-mediated disease is common warts, plantar warts, flat warts, butcher warts, or epidermodysplasia verruciformis.

15 15. The method or kit of any of claims 1-8, wherein the HPV-mediated disease is respiratory papillomatosis, laryngeal papilloma, maxillary sinus papilloma, conjunctival papillomatosis, or oral focal hyperplasia.

16. The method or kit of any of claims 1-15, comprising, prior to the administration, identifying the individual as being less than 30 years of age.

20

17. The method or kit of any of claims 1-15, comprising, prior to the administration, identifying the individual as being less than 25 years of age.

18. The method or kit of any of claims 1-15, comprising, prior to the
25 administration, identifying the individual as being 14 to 25 years of age.

19. The method or kit of any of claims 1-15, comprising, prior to the administration, identifying the individual as being 18 to 25 years of age.

20. The method or kit of any of claims 1-19, wherein the epitope is a peptide that binds to the binding groove of an MHC class I molecule.

5 21. The method or kit of any of claims 1-19, wherein the epitope is a peptide that binds to the binding groove of an MHC class II molecule.

22. The method or kit of any of claims 1-21, further comprising, after the administering step, observing an elimination of the CIN or a reduction in the severity
10 of the CIN.

23. The method or kit of any of claims 1-21, further comprising, after the administering step, observing an elimination of the HPV-mediated disease, a reduction in the severity of the HPV-mediated disease, an elimination of a symptom
15 of the HPV-mediated disease, an reduction of a symptom of the HPV-mediated disease, or a combination thereof.

24. The method or kit of any of claims 1-23, wherein the HPV-mediated disease is anogenital warts.

20

25. The method or kit of any of claims 1-24, wherein the polypeptide comprises an epitope from an HPV strain 16 protein.

26. The method or kit of any of claims 1-24, wherein the polypeptide
25 comprises an epitope from an HPV strain 18 protein.

27. The method or kit of any of claims 1-26, wherein the polypeptide is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein.

5 28. The method or kit of any of claims 1-27, wherein the hybrid polypeptide comprises an epitope from an HPV strain 16 E6 protein and an epitope from an HPV strain 16 E7 protein.

10 29. The method or kit of any of claims 1-28, wherein the hybrid polypeptide comprises an epitope from an HPV strain 18 E6 protein and an epitope from an HPV strain 18 E7 protein.

15 30. The method or kit of any of claims 1-29, wherein the hybrid polypeptide comprises an epitope from an HPV strain 16 E6 protein, an epitope from an HPV strain 16 E7 protein, an epitope from an HPV strain 18 E6 protein, and an epitope from an HPV strain 18 E7 protein.

20 31. The method or kit of any of claims 1-30, wherein the hybrid polypeptide comprises a segment of an HPV strain 16 E6 protein that is at least eleven amino acids in length and comprises two epitopes, a segment of an HPV strain 16 E7 protein that is at least eleven amino acids in length and comprises two epitopes, a segment of an HPV strain 18 E6 protein that is at least eleven amino acids in length and comprises two epitopes, and a segment of an HPV strain 18 E7 protein that is at least eleven amino acids in length and comprises two epitopes.

25

32. The method or kit of any of claims 1-31, wherein the polypeptide is a hybrid polypeptide comprising three segments, wherein the three segments are either contiguous or are separated by a spacer amino acid or spacer peptide:

(a) the first segment having the amino acid sequence of a first portion of a naturally occurring HPV protein, the first segment being at least eleven amino acids in length and comprising two epitopes;

5 (b) the second segment having the amino acid sequence of a second portion of a naturally occurring HPV protein, the second segment being at least eleven amino acids in length and comprising two epitopes different from the epitopes of (a); and

(c) the third segment having the amino acid sequence of a third portion of a naturally occurring HPV protein, the third segment being at least eleven amino acids in length and comprising two epitopes different from the epitopes of (a) and (b).

10

33. The method or kit of claim 32, wherein the first, second, and third portions are portions of two or three different naturally occurring HPV proteins.

15 34. The method or kit of claim 32, wherein the hybrid polypeptide further comprises a signal sequence.

35. The method or kit of any of claims 1-34, wherein the polypeptide is a hybrid polypeptide comprising at least one of the following segments of HPV strain 16 E6:

20 AMFQDPQERPRKLPQLCTEL,
LLRREVYDFAFRDLCIVYRDGNPY, or
KISEYRHYCYSLYGTTLEQQYNK,

and at least one of the following segments of HPV strain 16 E7:

TLHEYMLDLQPETTDLYSY,
25 QAEPDRAHYNIVTF, or
LLMGTLGIVCPICSQKP.

36. The method or kit of any of claims 1-35, wherein the hybrid polypeptide does not comprise a sequence identical to the sequence of either full length, intact E6 or full length, intact E7 protein from HPV strain 16.

5 37. The method or kit of any of claims 1-36, wherein the polypeptide is a hybrid polypeptide comprising at least one of the following segments of HPV strain 16 E6:

AMFQDPQERPRKLPQLCTEL,

LLRREVYDFAFRDLCIVYRDGNPY, or

10 KISEYRHYCYSLYGTTLEQQYNK;

at least one of the following segments of HPV strain 16 E7:

TLHEYMLDLQPETTDLYSY,

QAEPDRAHYNIVTF, or

LLMGTLGIVCPICSQKP;

15 at least one of the following segments of HPV strain 18 E6:

RRPYKLPDLCTELNTSLQDIEITCVYCKTVLELTEVFEFAFK, or

SVYGDTLEKLTNTGLYNLLRCLRCQK,

and at least one of the following segments of HPV strain 18 E7:

KATLQDIVLHLEPQNEIPV,

20 HTMLCMCKCEARI, or

AFQQLFLNTLSFVCPWC.

38. The method or kit of any of claims 1-37, wherein the polypeptide comprises the amino acid

25 sequence AMFQDPQERPRKLPQLCTELLLRREVYDFAFRDLCIVYRDGNPYKIS
EYRHYCYSLYGTTLEQQYNKTLHEYMLDLQPETTDLYSYQAEPDRAHYNIVT
FLLMGTLGIVCPICSQKPRRPYKLPDLCTELNTSLQDIEITCVYCKTVLELTEVF

EFAFKSVYGDITLEKLTNTGLYNLLIRCLRCQKKATLQDIVLHLEPQNEIPVHT
MLCMCKCEARIAFQQFLNTLSFVCPWC.

39. The method or kit of any of claims 1-37, wherein the polypeptide
5 comprises the amino acid
sequence MAISGVPVLGFFIIA VLMSAQESWAAMFQDPQERPRKLPQLCTELL
RREVYDFAFRDLCIVYRDGNPYKISEYRHYCYSLYGTTLEQQYNKTLHEYML
DLQPETTDLYSYQAEPDRAHYNIVTFLLMGTLGIVCPICSQKPRRPYKLPDLCT
ELNTSLQDIEITCVYCKTVLELTEVFEFAFKSVYGDITLEKLTNTGLYNLLIRCL
10 RCQKKATLQDIVLHLEPQNEIPVHTMLCMCKCEARIAFQQFLNTLSFVCPW
C.

40. The method or kit of any of claims 1-37, wherein the polypeptide consists
of the amino acid
15 sequence MAISGVPVLGFFIIA VLMSAQESWAAMFQDPQERPRKLPQLCTELL
RREVYDFAFRDLCIVYRDGNPYKISEYRHYCYSLYGTTLEQQYNKTLHEYML
DLQPETTDLYSYQAEPDRAHYNIVTFLLMGTLGIVCPICSQKPRRPYKLPDLCT
ELNTSLQDIEITCVYCKTVLELTEVFEFAFKSVYGDITLEKLTNTGLYNLLIRCL
RCQKKATLQDIVLHLEPQNEIPVHTMLCMCKCEARIAFQQFLNTLSFVCPW
20 C.

41. The method or kit of any of claims 1-40, wherein the nucleic acid
comprises a plasmid vector.

25 42. The method or kit of any of claims 1-40, wherein the nucleic acid
comprises a viral vector.

43. The method or kit of any of claims 1-42, wherein the pharmaceutical
composition comprises a microparticle.

44. The method or kit of any of claims 1-43, wherein the pharmaceutical composition comprises a microparticle having the nucleic acid encapsulated therein.

5 45. The method or kit of any of claims 1-44, wherein the microparticle comprises a biodegradable poly (D,L-lactide co-glycolide).

46. The method or kit of any of claims 1-45, wherein the microparticle is less than 10 microns in diameter.

10

47. The method or kit of any of claims 1-46, wherein the pharmaceutical composition comprises an adjuvant.

15 48. The method or kit of any of claims 1-47, where the administration is performed via injection.

49. The method or kit of claim 48, where the injection is intramuscular.

20 50. The method or kit of claim 48, where the injection is subcutaneous or intracervical.

51. A method of treating a CIN in a human, the method comprising:
identifying an individual as having a CIN; and
administering to the individual an effective amount of a pharmaceutical
25 composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein prior to the administration the individual is not tested to determine the identity of one

or more types of HPV present in the individual, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

5

52. A method of treating a CIN in a human, the method comprising:

identifying an individual as having a CIN; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes
10 a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein prior to the administration the individual is not identified as having an HPV type that encodes a protein a portion of which is identical to an epitope contained in the polypeptide, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not
15 comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

53. A method of treating a CIN in a human, the method comprising:

identifying an individual as having a CIN; and

20 administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type present in the individual, and wherein the
25 polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

54. A method of treating a CIN in a human, the method comprising:

identifying an individual as having a CIN; and

administering to the individual an effective amount of a pharmaceutical composition identified as able to elicit a cross-reactive anti-HPV immune response,
5 wherein the pharmaceutical composition comprises a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type present in the individual, wherein the polypeptide (a) is a hybrid polypeptide
10 comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

55. A method of treating a CIN in a human, the method comprising:

15 identifying an individual as having a CIN;

determining one or more types of HPV present in the individual; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein
20 the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type identified as being present in the individual, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a
25 combination of (a) and (b).

56. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as having an HPV-mediated disease; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein prior to the administration the individual is not tested to determine the identity of one or more types of HPV present in the individual, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

57. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as having an HPV-mediated disease; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein prior to the administration the individual is not identified as having an HPV type that encodes a protein a portion of which is identical to an epitope contained in the polypeptide, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

58. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as having an HPV-mediated disease; and

administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a

portion of an HPV protein of an HPV type present in the individual, wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

59. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as having an HPV-mediated disease; and
administering to the individual an effective amount of a pharmaceutical composition identified as eliciting a cross-reactive anti-HPV immune response, wherein the pharmaceutical composition comprises a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type present in the individual, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

60. A method of treating an HPV-mediated disease in a human, the method comprising:

identifying an individual as having an HPV-mediated disease;
determining one or more types of HPV present in the individual; and
administering to the individual an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type identified as being present in the

individual, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

5

61. A method of selecting a treatment for an individual, the method comprising:

identifying an individual as having a CIN; and

prescribing for the individual, without first consulting any record that may
10 exist identifying the type or types of HPV present in the individual, an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7
15 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

62. A method of selecting a treatment for an individual, the method comprising:

20 identifying an individual as having an HPV-mediated disease; and

prescribing for the individual, without first consulting any record that may exist identifying the type or types of HPV present in the individual, an effective amount of a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally
25 occurring HPV protein, wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b).

63. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b); and

instructions for use of the pharmaceutical composition in treating a CIN in an individual that is not tested, prior to administration of the pharmaceutical composition, to identify one or more types of HPV present in the individual.

64. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b); and

instructions for use of the pharmaceutical composition in treating a CIN in an individual that is not identified, prior to administration of the pharmaceutical composition, having an HPV type that encodes a protein a portion of which is identical to an epitope contained in the polypeptide.

65. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7

protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b); and

instructions for use of the pharmaceutical composition in treating a CIN in an individual that has been identified as having one or more types of HPV, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type that has been identified as present in the individual.

66. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b); and

instructions for use of the pharmaceutical composition in treating an HPV-mediated disease in an individual that is not tested, prior to administration of the pharmaceutical composition, to identify one or more types of HPV present in the individual.

67. A kit comprising:

a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory fragment thereof, or (c) a combination of (a) and (b); and

instructions for use of the pharmaceutical composition in treating an HPV-mediated disease in an individual that is not identified, prior to administration of the

pharmaceutical composition, having an HPV type that encodes a protein a portion of which is identical to an epitope contained in the polypeptide.

68. A kit comprising:

- 5 a pharmaceutical composition comprising a nucleic acid comprising a nucleotide sequence that encodes a polypeptide comprising an epitope of a naturally occurring HPV protein, and wherein the polypeptide (a) is a hybrid polypeptide comprising an epitope from an HPV E6 protein and an epitope from an HPV E7 protein, (b) does not comprise a heat shock protein or an immunostimulatory
10 fragment thereof, or (c) a combination of (a) and (b); and
- instructions for use of the pharmaceutical composition in treating an HPV-mediated disease in an individual that has been identified having one or more types of HPV, wherein the polypeptide does not comprise an epitope consisting of a sequence identical to a portion of an HPV protein of an HPV type present in the individual.

15

69. The method of claim 51, comprising, prior to the administration, identifying the individual as being 30 years of age or younger.

70. The method of claim 51, comprising, prior to the administration,
20 identifying the individual as being less than 30 years of age.

71. The method of claim 51, comprising, prior to the administration, identifying the individual as being less than 25 years of age.

25 72. The method of claim 51, comprising, prior to the administration, identifying the individual as being 18 to 25 years of age.